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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,534	07/24/2003	Tong Zhang	10018743	8212

22879 7590 10/31/2006	EXAMINER
HEWLETT PACKARD COMPANY	QIN, JIANCHUN

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ART UNIT	PAPER NUMBER
2837	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/625,534	ZHANG, TONG
	Examiner	Art Unit	
	Jianchun Qin	2837	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>15 September 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-42</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3,10,15-23,27,29-35,38 and 40-42</u> is/are rejected.

7)☒ Claim(s) <u>4-9, 11-14, 24-26, 28, 36, 37 and 39</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set forth in

37 CFR 1.17(e), was filed in this application after final rejection. Since this application is

eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e)

has been timely paid, the finality of the previous Office action has been withdrawn pursuant to

37 CFR 1.114.

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

3.   Claims 1, 2, 10, 31-34 and 38 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Goodman et al. (U.S. Pub. No. 20020147728) in view of Jiang et al.

(U.S. Pub. No. 20050075863).

With respect to claim 1:

Goodman et al. teach a method for automatic classification of music, comprising:

receiving a music piece to be classified based on a hierarchy of music classification

categories (Abstract; sections 0024, 0053, 0057 and 0060); determining when the

received music piece comprises human singing (sections 0053, 0057 and 0061);

labeling the received music piece as singing music when the received music piece is

determined to comprise human singing (Fig. 6; sections 0024, 0055 and 0061); and

labeling the received music piece as instrumental music when the received music piece

is not determined to comprise human singing (Fig. 6; sections 0024, 0055 and 0061);

classifying and labeling the music piece into a specific category of the determined music

type (sections 0024, 0025, 0055 and 0061).

Goodman et al. do not mention expressly: determine a music type based on a

detection of human singing by analyzing a waveform of the music piece comprising a

composite of music components.

Jiang et al. teach a method for determining a music type based on a detection of

human singing by analyzing a waveform of the music piece comprising a composite of

music components (sections 0022-0023, 0025 and 0036-0037).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to incorporate the teaching of Jiang et al. into the invention of

Goodman et al. in order to digitally classify a received music piece accurately and

efficiently by using a robust technique of audio information processing (Jiang et al.,

sections 0003-0004).

With respect to claim 2:

Goodman et al. also teach: the received music piece is comprised of at least

music sounds, and wherein the music piece can include one or more of audiovisual

signals and/or non-music sounds (section 0057, lines 5-7).

With respect to claim 31:

Goodman et al. teach a system for automatic classification of music (see Abstract), comprising: receiving a music piece to be classified based on a hierarchy of music classification categories (Abstract; sections 0024, 0053, 0057 and 0060); means for determining a music type (sections 0053, 0057 and 0061); selecting categories of the determined music type to control the classifying of the received music piece (Fig. 6; sections 0024, 0055 and 0061); and classifying the received music piece based on the selected categories, wherein said means for determining a music type determines when the received music piece comprises human singing and/or instrumental music (Fig. 6; sections 0024, 0055 and 0061).

Goodman et al. do not mention expressly: using waveform analysis to determine when the received music piece comprising a plurality of music components comprises human singing; write the labeled music piece into a library of classified music pieces.

Jiang et al. teach a device configured to receive a music piece to be classified (section 0022); using waveform analysis to determine when the received music piece comprising a plurality of music components comprises human singing (sections 0022-0023, 0025 and 0036-0037).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Jiang et al. into the invention of Goodman et al. in order to digitally classify a received music piece accurately and efficiently by using a robust technique of audio information processing (Jiang et al., sections 0003-0004).

With respect to claims 32 and 33:

Goodman et al. further teach: means for labeling the classified music piece as a particular category of music (sections 0024, 0055 and 0061), and means for selecting control parameters to control, adjust, and/or customize the classifying of the music piece (section 0063).

With respect to claim 34:

Goodman et al. teach a computer readable medium encoded with software for automatically classifying a music piece (see Abstract), wherein the software is provided for determining when a music piece comprises human singing (sections 0053, 0057 and 0061); labeling the music piece as singing music when the music piece is determined to comprise human singing (sections 0024, 0055 and 0061); and labeling the music piece as instrumental music when the music piece is not determined to comprise human singing (sections 0024, 0055 and 0061); and classifying and labeling the music piece into a specific category of the determined music type (sections 0024, 0025, 0055 and 0061).

Goodman et al. do not mention expressly: determine a music type based on a detection of human singing by analyzing a waveform of the music piece comprising a composite of music components.

Jiang et al. teach a method for determining a music type based on a detection of human singing by analyzing a waveform of the music piece comprising a composite of music components (sections 0022-0023, 0025 and 0036-0037).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Jiang et al. into the invention of Goodman et al. in order to digitally classify a received music piece accurately and efficiently by using a robust technique of audio information processing (Jiang et al., sections 0003-0004).

With respect to claims 10 and 38:

Claims 10 and 38 recite an intended use of the method and system for classification of music taught by Goodman et al. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

4.   Claims 3 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman et al. in view of Jiang et al., as applied to claims 1 and 34 above, and further in view of Stewart (U.S. Pat. No. 4015087).

Goodman et al. and Jiang et al. teach a method and computer software for classification of music that includes the subject matter discussed above in accordance with claims 1 and 34. Goodman et al. and Jiang et al. do not mention expressly: a spectrogram analysis is used for said classification.

Stewart teaches a technique of spectrogram analysis for human speech

recognition (col. 1, lines 13-16; cols. 1-2, lines 61-6; col. 10, lines 21-38).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the teaching of Stewart in the combination of Goodman

et al. and Jiang et al. in order to provide an algorithm for audio signal analysis based on

spectral energy concentration of a portion of the audio signal in the time domain as well

as in the frequency domain (Stewart, col. 2, lines 7-13).

5.   Claims 15-18 and 40-42 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Goodman et al. in view of Jiang et al., as applied to claims 1 and 34

above, and further in view of Kanevsky et al. (U.S. Pat. No. 6434520).

Goodman et al. and Jiang et al. teach a method and computer software for

classification of music that includes the subject matter discussed above in accordance

with claims 1 and 34. Goodman et al. further teach, regarding claim 17, the user selects

a hierarchical structure of categories for controlling the classification of the music piece

(section 0063).

Goodman et al. and Jiang et al. do not mention expressly: regarding claims 15

and 40, the labeled music piece is written into a library of classified music pieces;

regarding claims 16 and 41, the labeling and/or the writing of the labeled music piece is

controlled by parameters selected by a user; and regarding claims 18 and 42, the

labeled music piece is written into a hierarchical database according to the structure

selected by the user and wherein the labeled music pieces in the hierarchical database

can be browsed according to the hierarchy.

Kanevsky et al. disclose a system and method for indexing and querying audio archives, and teach the step and means of: when a music piece satisfies at least one selected category, writing the labeled music piece into a library of classified music pieces (col. 1, lines 54-56; col. 7, lines 21-39 and col. 8, lines 34-36); the labeling and/or the writing of the labeled music piece is controlled by parameters selected by a user (col. 7, lines 45-59); and the labeled music piece is written into a hierarchical database according to the structure selected by the user (col. 7, lines 45-67) and wherein the labeled music pieces in the hierarchical database can be browsed according to the hierarchy (col. 9, lines 34-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kanevsky et al. in the combination of Goodman et al. and Jiang et al. to obtain a library of classified music piece for the purpose of efficient sorting and storing music pieces in their archives and facilitating subsequent retrieval of desired information (Kanevsky et al., col. 1, lines 28-39).

6.   Claims 19-22, 27 and 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodman et al. in view of Jiang et al. and Kanevsky et al.

With respect to independent claim 19:

Goodman et al. teach a method for classification of music (see Abstract), comprising: selecting parameters for controlling the classification of a music piece, wherein the selected parameters establish a hierarchy of categories for classifying the music piece into at least a music type having specific categories (Fig. 6; section 0024, 0049, 0053, 0057 and 0061); determining, in a hierarchical order and for each selected

category, when the music piece satisfies the category (Fig. 6; section 0024, 0049, 0053,

0057 and 0061); labeling the music piece with each selected category of a music type

satisfied by the music piece (section 0024, 0025, 0049, 0053 and 0061).

Goodman et al. do not mention expressly: using waveform analysis to

determining when the music piece satisfies the category; and when the music piece

satisfies at least one selected category of a music type, writing the labeled music piece

into a library according to a hierarchy of the categories satisfied by the music piece.

Jiang et al. teach a method for determining a music type based on a detection of

human singing by analyzing a waveform of the music piece comprising a composite of

music components (sections 0022-0023, 0025 and 0036-0037).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to incorporate the teaching of Jiang et al. into the invention of

Goodman et al. in order to digitally classify a received music piece accurately and

efficiently by using a robust technique of audio information processing (Jiang et al.,

sections 0003-0004).

Kanevsky et al. disclose a system and method for indexing and querying audio

archives, and teach the step and means of, when a music piece satisfies at least one

selected category, writing the labeled music piece into a library according to a hierarchy

of the categories satisfied by the music piece (col. 1, lines 54-56; col. 7, lines 21-39 and

col. 8, lines 34-36).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the teaching of Kanevsky et al. in the invention of

Goodman et al. to obtain the invention as specified in claim 19 in order to efficiently sort

and store music pieces in their archives and to facilitate subsequent retrieval of desired

information (Kanevsky et al., col. 1, lines 28-39).

With respect to claims 20 and 21:

Goodman et al., Jiang et al. and Kanevsky et al. teach a method for classification

of music that includes the subject matter discussed above in accordance with claim 19.

Goodman et al. further teach, the categories include instrumental, singing music,

symphony, a specific band, specific instrument music, other harmonic music, chorus,

and vocal solo (section 0057).

Kanevsky et al. further teach: selecting parameters for subsequent browsing of

the library for desired music pieces (col. 9, lines 34-40).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the teaching of Kanevsky et al. in the invention of

Goodman et al. and Jiang et a. in order to efficiently sort and store music pieces in their

archives and to facilitate subsequent retrieval of desired information (Kanevsky et al.,

col. 1, lines 28-39).

With respect to independent claim 22:

Goodman et al. teach a computer-based system for automatic classification of

music (see Abstract), comprising: receiving a music piece to be classified (Abstract;

sections 0024, 0053, 0057 and 0060); a computer configured to determine a music type

based on a detection of human singing (sections 0053, 0057 and 0061); label the

received music piece as singing music when the received music piece is determined to

comprise human singing (sections 0024, 0055 and 0061); label the received music piece as instrumental music when the received music piece is not determined to comprise human singing (sections 0024, 0055 and 0061).

Goodman et al. do not mention expressly: using waveform analysis to determine when the received music piece comprising a plurality of music components comprises human singing; write the labeled music piece into a library of classified music pieces.

Jiang et al. teach a device configured to receive a music piece to be classified (section 0022); using waveform analysis to determine when the received music piece comprising a plurality of music components comprises human singing (sections 0022-0023, 0025 and 0036-0037).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teaching of Jiang et al. into the invention of Goodman et al. in order to digitally classify a received music piece accurately and efficiently by using a robust technique of audio information processing (Jiang et al., sections 0003-0004).

Kanevsky et al. teach: a device configured to receive a music piece to be classified (Fig. 2A, #200); and write the labeled music piece into a library of classified music pieces (Fig. 2B, #213; col. 8, lines 34-36).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Kanevsky et al. in the invention of Goodman et al. to obtain a library of classified music pieces for the purpose of efficiently

sorting and storing music pieces in their archives to facilitate subsequent retrieval of

desired information (Kanevsky et al., col. 1, lines 28-39).

With respect to claim 27:

Claim 27 recites an intended use of the method and system for classification of

music taught by Goodman et al. It has been held that a recitation of the intended use of

the claimed invention must result in a structural difference between the claimed

invention and the prior art in order to patentably distinguish the claimed invention from

the prior art. If the prior art structure is capable of performing the intended use, then it

meets the claim. In a claim drawn to a process of making, the intended use must result

in a manipulative difference as compared to the prior art. See *In re Casey*, 152 USPQ

235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

With respect to claims 29 and 30:

Goodman et al., Jiang et al. and Kanevsky et al. teach a method and system for

classification of music that includes the subject matter discussed above in accordance

with claim 22. Goodman et al. further teach: regarding claim 30, an interface configured

to select parameters for controlling the classification of the music (section 0063).

Kanevsky et al. further teach, regarding claim 29, that the labeling and/or the

writing of the labeled music piece is controlled by parameters selected by a user (col. 7,

lines 45-59).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the teaching of Kanevsky et al. in the invention of

Goodman et al. and Jiang et al. in order to efficiently sort and store music pieces in their

archives and to facilitate subsequent retrieval of desired information (Kanevsky et al.,

col. 1, lines 28-39).

7.   Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Goodman et al. in view of Jiang et al. and Kanevsky et al., as applied to claim 22 above,

and further in view of Stewart.

Goodman et al., Jiang et al. and Kanevsky et al. teach a method for classification

of music that includes the subject matter discussed above.

The combination of Goodman et al., Jiang et al. and Kanevsky et al. does not

mention expressly: the presence of human singing on the received music piece is

determined by analyzing a spectrogram of the received music piece.

Stewart teaches a technique of spectrogram analysis for human speech

recognition (col. 1, lines 13-16; cols. 1-2, lines 61-6; col. 10, lines 21-38).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to include the teaching of Stewart in the combination of Goodman

et al. and Jiang et al. in order to provide an algorithm for audio signal analysis based on

spectral energy concentration of a portion of the audio signal in the time domain as well

as in the frequency domain (Stewart, col. 2, lines 7-13).

Allowable Subject Matter

8.   Claims 4-9, 11-14, 24-26, 28, 36, 37 and 39 are objected to as being dependent

upon a rejected base claim, but would be allowable if rewritten in independent form

including all of the limitations of the base claim and any intervening claims.

Reasons for Allowance

9.   The following is an examiner's statement of reasons for allowance:

Please see previous Office Action dated 03/08/06 for reasons for allowance of

the claims of 4-9, 11-14, 24-26, 28, 36, 37 and 39.

Response to Arguments

10.   Applicant's arguments received 09/15/06 with respect to claims 1-42 have been

considered but are moot in view of the new ground(s) of rejection.

Claims 1-3, 10, 15-23, 27, 29-35, 38 and 40-42 are rejected as new evidence has

been found from the cited prior art references to teach the limitations newly added in the

amended claims. Detailed response is given in sections 3-6 as set forth above in this ·

Office Action.

In response to Applicant's arguments that "[t]he Jiang et al. publication does not

relate to classifying a music piece based on a hierarchy of music classification

categories, wherein the music piece is classified and labeled into a specific category of

a determined music type", "[t]he Jiang et al. publication does not teach or suggest

analyzing a waveform of a music piece comprising a composite of music components",

and "[f]urther, the Jiang et al. publication does not teach or suggest classifying a music

piece based on a hierarchy of music classification categories, wherein the music piece

is classified into a specific category of the determined music type, as recited in claim 1",

the Examiner considers that the Goodman's disclosure teaches the claimed invention

recited in claims 1, 22 and 34 but is not clear about determine a music type based on a

detection of human singing by analyzing a waveform of the music piece comprising a

composite of music components. The combination of Goodman et al. with Jiang's

teaching of determine an audio signal type based on a detection of human singing by

analyzing a waveform of a portion of the audio signal comprising a composite of music

components reads on the claim. The rejection therefore stands.

Applicant's arguments regarding the Stewart patent and the Kanevsky patent are

not persuasive. These references are not used for rejecting the subject matter argued

by the Applicant with respect to independent claims 1, 19, 22, 31 and 34. Please see

sections 3-7 set forth above for more details.

Applicant further argued that "[t]applied references also do not teach or suggest

selecting parameters for controlling the classification of a music piece, wherein the

selected parameters establish a hierarchy of categories for classifying the music piece

into at least a music type having specific categories; and determining, in a hierarchical

order and for each selected category, when the music piece satisfies the category by

analyzing a waveform of the music piece comprising a composite of music components,

as recited in claim 19". This argument is not persuasive. The Examiner's position is that,

giving the claim the broadest reasonable interpretation, the Goodman reference teaches

the limitations of: selected parameters establish a hierarchy of categories for classifying

the music piece into at least a music type having specific categories; and determining,

in a hierarchical order and for each selected category, when the music piece satisfies

the category. Goodman is not clear about determining when the music piece satisfies

the category by analyzing a waveform of the music piece comprising a composite of

music components. The combination of Goodman et al. with Jiang's teaching of

determining when the music piece satisfies the category by analyzing a waveform of the

music piece comprising a composite of music components reads on the claim. The

rejection therefore stands.

The rejection of the independent claim 31 is maintained for the same reason

discussed above.

Contact Information

11.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Jianchun Qin whose telephone number is (571) 272-

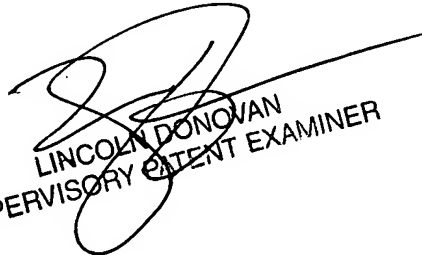5981. The examiner can normally be reached on 8am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Lincoln Donovan can be reached on (571) 272-1988. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jianchun Qin
Examiner
Art Unit 2837

JQ

LINCOLN DONOVAN
SUPERVISORY PATENT EXAMINER